

ABSTRACT OF THE DISCLOSURE

A semiconductor substrate and an impurity solid that comprises of impurity to be introduced to a diode formation region are held in a vacuum chamber. Inert or reactive gas is introduced into the vacuum chamber to generate plasma composed of the inert or reactive gas. A first voltage allowing the impurity solid to serve as a cathode for the plasma is applied to the said impurity solid and the said impurity solid is sputtered by ions in the plasma, thereby mixing the impurity within the said impurity solid into the plasma. A second voltage allowing a semiconductor substrate to serve as a cathode for the plasma is applied to the said semiconductor substrate, thereby directly introducing the impurity within the plasma to the surface portion of the diode formation region of the said semiconductor substrate, generating a impurity layer.